



## **Air Accident Investigation in Nepal: Why the Need for Improving or Re-designing?**

Friday, 31st July 1992 may have started much as any other day in Tribhuvan International Airport but the day would not end without the airport and its immediate environs, including the heart of the country's capital city Kathmandu, being plunged into chaos by the fatal crash of Thai Airways International Flight 311. All 99 passengers and 14 crew were killed in the accident. This was the first major passenger-carrying international airline fatal crash in Nepalese airspace. There followed a series of investigations for subsequent air crashes in the country. However, Nepal's system of accident investigation fell short in terms of several fundamental issues pertaining to both its organizational and human resources management.

### **Civil Aviation in Nepal**

For any landlocked nation, connectivity and accessibility are indispensably linked with development of reliable air transport. This is doubly true for Nepal given how its geological complexities and mountainous terrain hamper other forms of transport, rendering some areas otherwise virtually inaccessible. Thus, the development of transport, trade and tourism have all rested on crucial ongoing development of the country's civil aviation infrastructure. In order to bring some sense of scale to this importance, let's consider tourism, this being one of the major forebears of the Nepalese economy and a top government priority. In 2019, tourism in Nepal could aid in earning an estimated USD 651 million in foreign exchange, which is equivalent to 65% of all its goods exports (World Travel & Tourism Council, 2018). Moreover, if we include indirect and induced benefits, the travel and tourism sector accounted for fully 7.8% of Nepal's GDP in 2018. With already more than 80% of international tourists arriving in

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Nepal by air, a significant improvement of the civil aviation sector is vital for the nation to sustain progress in its socio-economic development. In this context, the air transport industry, which includes airlines and its supply chain, is estimated to support USD 272 million of Nepalese GDP (IATA, 2018). Moreover, since this industry is forecast to grow by 165% in the next 20 years, this would result in an additional 6.9 million passenger departures by 2038 in Nepal. In 2018 the IATA also estimated that if these forecasts are met, this increased demand would support approximately USD 2.9 billion of GDP and around 784,400 jobs.

There is some irony in the fact that the very feature that most attracts tourists to Nepal is precisely what makes provision of a robust aviation infrastructure most challenging - its diverse and complex geography, with altitudes ranging from 59 to 8848 meters above mean sea level. Nevertheless, regional airports and STOL (Short Take-off and Landing) airstrips are distributed all around the country, this means along the ribbon of plains bordering India to the south, and dotted also throughout the colossal mountain areas in the north (Appendix - 1). As might be expected, such terrain manifests in swiftly changing meteorological phenomenon, making aviation in this part of the world especially challenging. This composite of geographical and meteorological conditions gives rise to a variety of solutions in the form of a considerable variety of different types of aircraft operating from these airports. Each type possesses its particular characteristics. The selection of which type depends on tailoring the capabilities of a particular aircraft type to the demands of a particular route and destination airport. To illustrate how heterogeneous the aircraft operations for public air transport are within Nepalese airspace, we should note that they include many rotor-wing, as well as fixed-wing aircraft, and range in size from single prop-engine types, such as small Cessnas, right up to wide-body commercial jet aircraft.

Along with the terrain and meteorological circumstances, it is the lack of the latest aviation infrastructures, especially in the more remote airports, that most compounds the challenges posed for flight operations. In light of the number of accidents and serious air incidents in Nepal, there is huge concern about public air transportation safety. As per the aviation safety report, during the period of 2009 to 2018, 21 accidents claimed 164 lives in Nepal. The major culprits in these air accidents included Controlled Flight into Terrain, CFIT (74% of fatalities) followed by loss of control in flight (24% of fatalities), and runway excursion (CAAN, 2018). Several factors are known to contribute to CFIT, including distraction, complacency and fatigue of flight crews (Kelly & Efthymiou, 2019). The aim of the Chicago Convention (Convention on International Civil Aviation) and its requirement for incident and accident investigations

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as laid out in Annex 13 of the Convention is not to apportion blame but to ensure the continuous promotion of improved safety standards in an effort to prevent future tragedies. In order to convey this, the International Civil Aviation Organization (ICAO) has issued many international standards and recommended practices (SARPs) to its member states so that air accidents and serious incidents would be investigated in the same way (ICAO, 2016). However, several states are not able to establish and implement an effective accident and serious incident investigation system. It implies that these states face many challenges in complying with Article 26 of the Chicago Convention which obligates the state of occurrence to initiate and conduct thorough accident investigations. Many states are not be able to comply with this requirement owing to the lack of systematic organizational setup in these countries. Many reasons exist, such as insufficient human and financial resources, lack of required regulations, lack of proper training and inadequate equipment (Costa, 2011). Accident investigations can provide insights into human, technical, operational, organizational and cultural factors that contributed to errors and/or violations. By identifying and methodically analyzing such errors and violations, new solutions can be explored and safety recommendations come to be mandated. Obviously, such life-or-death outcomes involve the matter of human regard and integrity, but it should not be understated just how much public confidence in air transport safety enhances the business prospects of the sector, and by extension, the economic prospects for the nation.

### **Organization Responsible for Accident Investigations**

Air accident investigation is a complex task which requires a broad range of skill sets in investigators. The nature of aircraft accidents can lead to potential complexities in the investigation process (Strauch, 2016). These accidents are unscheduled, destructive and may result into the loss of life and property. In this context, universally, the mandatory investigation agencies are recognized as indispensable safety instruments for civil aviation. In Nepal, the Ministry of Culture, Tourism and Civil Aviation (MoCTCA) is the organization responsible for the investigation of air accidents in Nepalese airspace. It has to be admitted that this organization has suffered structural instability due to political interferences on several occasions. Initially, in 1957, the requirement and potential of civil aviation in Nepal for all civil aviation matters was put under the umbrella of the vast Ministry of Work, Communications and Transport. However, in 1982, Civil Aviation was hived off to become merged into the Ministry of Tourism. This organization came to be renamed as the Ministry of Tourism & Civil Aviation. Then, in 2000, the ministry responsible for cultural matters was also incorporated into the same ministry, resulting in the

nomenclature; Ministry of Culture, Tourism & Civil Aviation (MoCTCA). Currently, the Civil Aviation Division under MoCTCA comprises a unit responsible for air accident investigation in Nepal, and so this unit is led by the Joint Secretary under the organogram of MoCTCA (Appendix-2). Numerous disparate responsibilities are laid out in the scope of work for the civil aviation sector of MoCTCA (Appendix-3); nonetheless, it is this division which functions as the apex body for civil aviation and all its policy related matters in the country. Formulation, implementation, monitoring and evaluation of overall civil aviation policies are key roles of this division. Consider though, how diverse its core functions are, as shown in the following table:

**Table 1: Services of Civil Aviation Division**

<p style="text-align: center;"><b><u>Airlines Licensing</u></b></p> <ul style="list-style-type: none"> <li>● Operation of Airlines, Maintenance and Repair Organizations &amp; Flying Schools</li> <li>● Operation of recreational aviation - skydiving, paragliding, ultralight</li> </ul>	<p style="text-align: center;"><b><u>Safety &amp; Accident Investigation</u></b></p> <ul style="list-style-type: none"> <li>● Accident and incident investigation</li> <li>● Policies related to aviation safety, accident and serious incident investigation</li> <li>● Managing all matters being secretariat relating to investigation</li> </ul>
<p style="text-align: center;"><b><u>Bilateral Air Service Agreements (ASAs) &amp; International Relations</u></b></p> <ul style="list-style-type: none"> <li>● BASAs with other states</li> <li>● Exchange with international organizations like ICAO, IATA, ACI</li> <li>● Ratification of international conventions and protocols</li> </ul>	<p style="text-align: center;"><b><u>Other functions</u></b></p> <ul style="list-style-type: none"> <li>● Visa recommendations</li> <li>● Drone permits</li> <li>● Restricted area flight permits</li> </ul>

As in any organization, it is important to understand and identify the fundamental issues affecting the overall effectiveness and performance of the organization, likewise with MoCTCA. A PESTLE analysis is an extensively used tool for understanding and analyzing strategic risks. It helps to identify the changes and the effects of the external macro environment on an organization’s overall competitive position (Sammut-Bonnici & Galea, 2014). It is envisaged that a PESTLE analysis of the unit would highlight the following:

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**Political:** On several occasions political interference has been experienced in AAIU's organizational affairs, especially in selecting the number and specific persons in charge of accident investigations, along with authorizing which other members are to be involved in such investigations.

**Economic:** Only minimal investments exist or are earmarked specifically for enhancing human resources capabilities (accident investigators). Benefits for the investigators are not clearly specified and thus, decisions are often taken on an ad-hoc basis.

**Social:** No training schedule has been well established for investigators. Selected investigators, as part-time job holders, on many occasions are lacking the required level of skill and training in the field of investigation.

**Technology:** There is a complete lack of technological resources when it comes to accident investigation. Chief investigators and other members of the commission mostly fly to Europe or the United States in order to analyze basic readout of Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR). Additionally, the aircraft components are also sent to these nations for checking anomalies.

**Legal:** Nepal is a signatory of the Chicago Convention on International Civil Aviation and thus, obliged to follow Annex-13 of the convention regarding air accident investigations. Moreover, Civil Aviation (Accident Investigation) Regulation, 2014 was enacted in order to ensure high-level efficiency and quality in civil aviation safety investigations. Some of the salient features are as follows:

- Mandatory for government to publicize every accident investigation report.
- Laid out qualifications and experience for eligibility to become an investigator.
- Stipulated duties and responsibilities of the investigation commission.
- Mandated MoCTCA to immediately dispatch its technical team for preliminary investigation to an accident/incident site

**Environmental:** The emergence of multiple parties with competing interests and agendas puts immense pressure in the investigation process (Appendix - 4).

- Expectations from victims' families, the public's expectations as concerned citizens and travelers
- Increasing globalization of aviation, media presence, including social media
- More legal proceedings, greater Complexity of aircraft and aviation systems

On the basis of the above analysis, inefficiency in human resources capacity enhancement, human resources retention and lack of strategic orientation can be identified as key issues of the unit.

### **Status of Air Accident Investigation**

Safety aspects of air transportation have improved dramatically since the commencement of commercial airlines operation over a century ago. Aviation is now considered as the safest mode of commercial transportation. Nevertheless, safety performance is not uniformly distributed across various segments of public air transport, nor uniformly among all states and regions of the world. Clinton et. al (2013) concluded that developing nations show poorer safety records as compared to advanced economies. Moreover, aviation safety in Nepal is a tremendous challenge given its geographical complexity, range and types of aircraft operation, aviation infrastructure and changing meteorological conditions. Every year, about one to two air accidents (fixed wing/rotor-wing aircraft) occur; and these accidents are mostly concentrated in the airports lying in the mountainous areas (JICA, 2021). The Universal Safety Oversight Audit Program (USOAP), under ICAO, is responsible for conducting aviation safety oversight audits. These identify any deficiencies of its member states, and also make an assessment of improvements in aviation systems. Although in its 2017 audit, Nepal raised the rate of effective implementation from 46.96% in 2009 to 66.76% in 2017, which was above the Global Aviation Safety Plan (GASP) benchmark of 60% (ICAO, 2019), some very concerning safety oversight margins were still identified, especially with regard to accident and incident investigations. Currently, the performance of Nepal in the ICAO audit of accident investigation stands at 18.68% which is substantially below the world average of 57.08% (Appendix - 5). When compared with South Asian counterparts, Nepal stands at the lowest position in terms of effective implementation of accident investigation.

### **Organizational Challenges in AAIU**

- **Conflicts of Interest:** Both the licensing unit and the accident investigation unit are under the same Joint Secretary (Appendix -2). Many times, the Joint Secretary is principal investigator of an accident investigation. Not only that, the same Joint Secretary is appointed as the board member of Civil Aviation Authority of Nepal (CAAN) – the airport operator and Nepal Airlines Corporation – a national flag carrier of Nepal. Inevitably, the existence of such a functional conflict of interest severely impairs the quality of accident investigation. Moreover, in the past, investigators used to go abroad on airline expenses for technical analyses. This was not only a complete violation of the rules, but also, a complete divergence from the fundamental essence of air accident investigations. On a number of occasions in previous investigations, by constituting the probe committee to include a sitting CAAN aviation safety inspector to participate and/or lead the investigation team, directly

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responsible for safety oversight of airlines, MoCTCA has failed to bring any scrutiny to the composition of investigation teams despite the glaring conflict-of-interest scenario. Hence, due to the lack of an all-powerful independent investigation authority, stakeholders have criticized the investigation reports as being suspect and superficial.

- **Ownership and Accountability of Investigation Reports:** Apart from the incorporation of a few technical aviation officers in the ministry, there is nothing much guiding the duties of these officers' involvement in the core job of accident investigation. Accident Investigation Commissions are formed on an ad-hoc basis, and operate for a limited time. The technical members of the part-time probe commission, sourced from airlines, the Nepalese Army and other organizations, would certainly already possess their own core job responsibilities, and thus the investigation becomes just another side job. On the one hand, once the final report is presented to the minister, investigators need not bear any ownership and accountability for its contents. On the other hand, the accident investigation unit being denied sufficient human resources, could not perform adequately in monitoring the effectiveness of the safety recommendations anyway.
- **Ambiguity in Understanding the Goal of Investigation:** Air accident investigation in itself is a highly specialized and demanding role. Most of the investigations comprise uncertainties about cause, complexities in the process of inquiry, multiple aviation related stakeholders and no fixed solution. That is why, these investigations can be difficult, time consuming and resource intensive (Coury et. al, 2008). The key objective of air crash investigation is the prevention of recurrence of accidents of similar nature in future. However, there exist differences regarding the goal of these investigations among investigators, aviation investigators and victim's families. Furthermore, during and after the accident investigation, there is a huge demand from the victims' side and the media for access to non-disclosure materials such as CVR, FDR and ATC transcripts. Moreover, a contemptuous lack of sensitivity among investigators, in terms of their handling of victims' families and relatives, has further undermined their credibility. These kinds of situations and practices are observed in many states during the investigation process. This has led to a complete lack of trust and confidence, not to mention misconceptions, among stakeholders, about the purpose of the accident investigation and the processes it should undertake. It is crucial to establish the trust of the general public and the aviation industry in its ability to conduct independent and objective investigations. In order to develop such trust, various factors such as the investigation framework, actual and perceived independence of the accident investigating body, safety culture within the aviation industry, qualities of investigators and the quality of their liaison with families associated with air crashes (Smart, 2004). Such dubious

behavior means the stakeholders often have doubts about the effectiveness of any safety recommendations in terms of whether they will really do anything to improve aviation safety.

### **Human Resources Management Issues in AAIU**

- **Irrelevant Positions in Organogram:** For a core technical function of aviation safety and accident investigation, the roles for skilled and efficient human resources should become a key driver in ensuring safety through the monitoring and evaluation of safety recommendations of accident investigation reports. It is of the utmost importance to promote the well-being of the staff, including through the designing of activities that enhance the skills of employees and further their career growth. Some of the positions in the organization chart of the Civil Aviation Division are not especially relevant. Consider, for instance, the position of highway engineers (civil). How much is this related to civil aviation? As a result, these positions are not occupied yet, however, neither management or leadership have any intentions or plans to remove those positions from the organigram. In addition, since the focus of the work plan over the years has embraced such a wide array of activities (see Table 1), the limited number of employees from the accident investigation unit are compelled to allocate their effort and time to responsibilities within other units.
- **Unattractive Division and Unit:** The position in charge of the accident investigation unit (undersecretary) is also vacant, and has been for more than 10 years. Should this not have been of some concern for management? However, there have been no initiatives undertaken by the organization to attract human resources to the unit. Similarly, the lack of human resources (safety, engineering, operations) has led to the temporary assignment of human resources from CAAN and air operators to participate in several accident investigations in the past. It is not possible for such direct involvement of these personnel in the investigation process to not compromise the independence of the due investigation. As required by the international standards, the independence of the investigations will ensure the credibility of AAIU. Ultimately, it allows stakeholders to trust the authorities which in turn aid in voluntary reporting of information. As a result, it ensures and improves the safety standards in public air transportation. However, deviating from these activities would severely impair the ICAO's audit results (Figure 1, Appendix - 5).
- **Ill-practice of Training:** Investigators are required to possess high levels of technical skill and knowledge of the aviation domain. They need to be trained in such a way that they can react swiftly in order to preserve evidence which may be perishable or vulnerable (Nixon & Braithwaite, 2018). Moreover, they will most probably interact and work in a multinational and multidisciplinary team.



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However, there are no schedules for either regular or refresher accident investigation related training. Lack of such training does not provide any direct benefit to the investigation process, nor ultimately to the organization.

Hence, as a result of this gross negligence in terms of organizational set up and performance, the audit reports on accident investigations described 63 protocol findings which were substandard; the highest number from among the various criteria (CAAN, 2019). Of these, the majority (39) are concerned with the area of accident investigation.

**Table 2: Protocols Findings by Area and Critical Elements**

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1		1				4		
CE-2	2		3	1		7	2	2
CE-3		4	1	1	1	7	10	2
CE-4			4	4	1	6	29	3
CE-5			1		1	39	3	4
CE-6			10	4	1		17	10
CE-7			4	4	1		8	10
CE-8			3	2	1	11	4	7

\*AIG= Accident Investigation.

*Adapted from Air Safety Report, 2019*

**Conclusion:**

The conflicts of interest embedded in the operation and management of the Civil Aviation Division, together with the lack of a sufficient number of competent investigators and employees in the Air Accident Investigation Unit, are both deeply concerning matters. These are serious and unconscionable flaws because they lead to ineffective implementation of safety recommendations of air accident reports, and ultimately, to an internationally sub-par and unacceptable level of aviation safety. The prevailing complexities and complete lack of resources in the present organizational setup make an overhaul of the organization imperative. The overhaul needs to start with fundamental changes by clarifying the goals it is tasked with, enhancing its capacity and capability, and eliminating all conflicts of interest. However, complete reform is only possible with dedicated structural changes, visionary leadership and political will. The current system of organizational setup and operational practices are not adding any public value in that they are failing to execute their role with sufficient integrity. The core findings of this evaluation are the manifest shortcomings when it comes to ensuring investigator training, the maintaining of a roster of independent investigators, and the availability of adequate resources with planning and strategies commensurate to the task.

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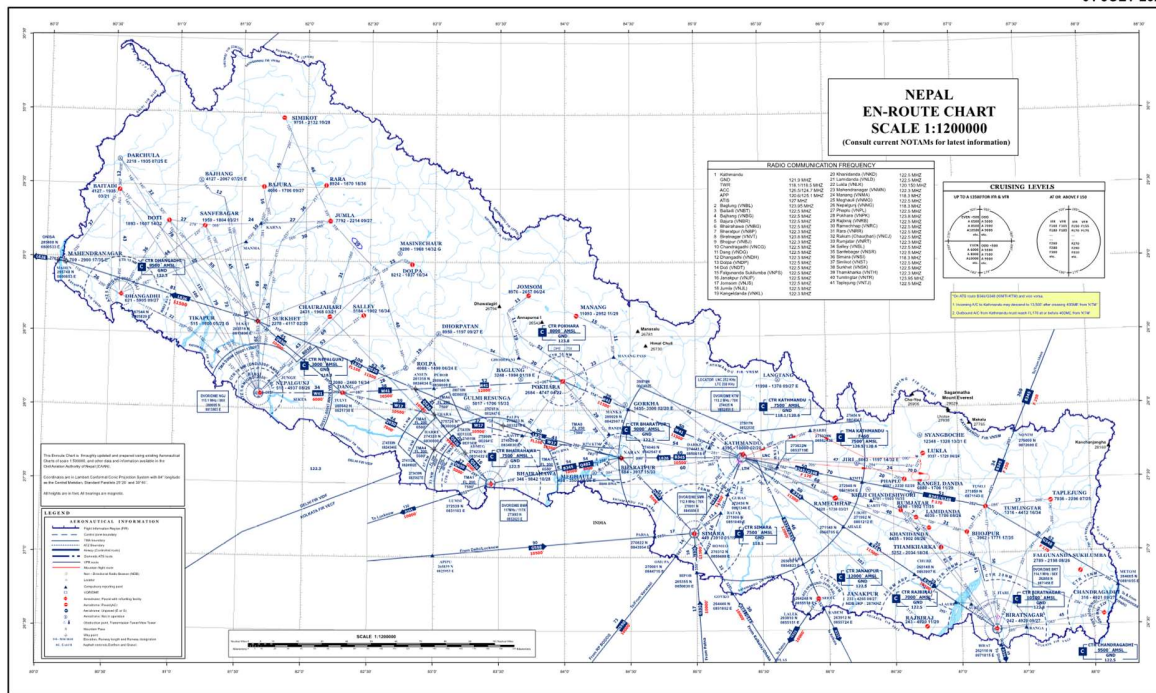
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# Annex

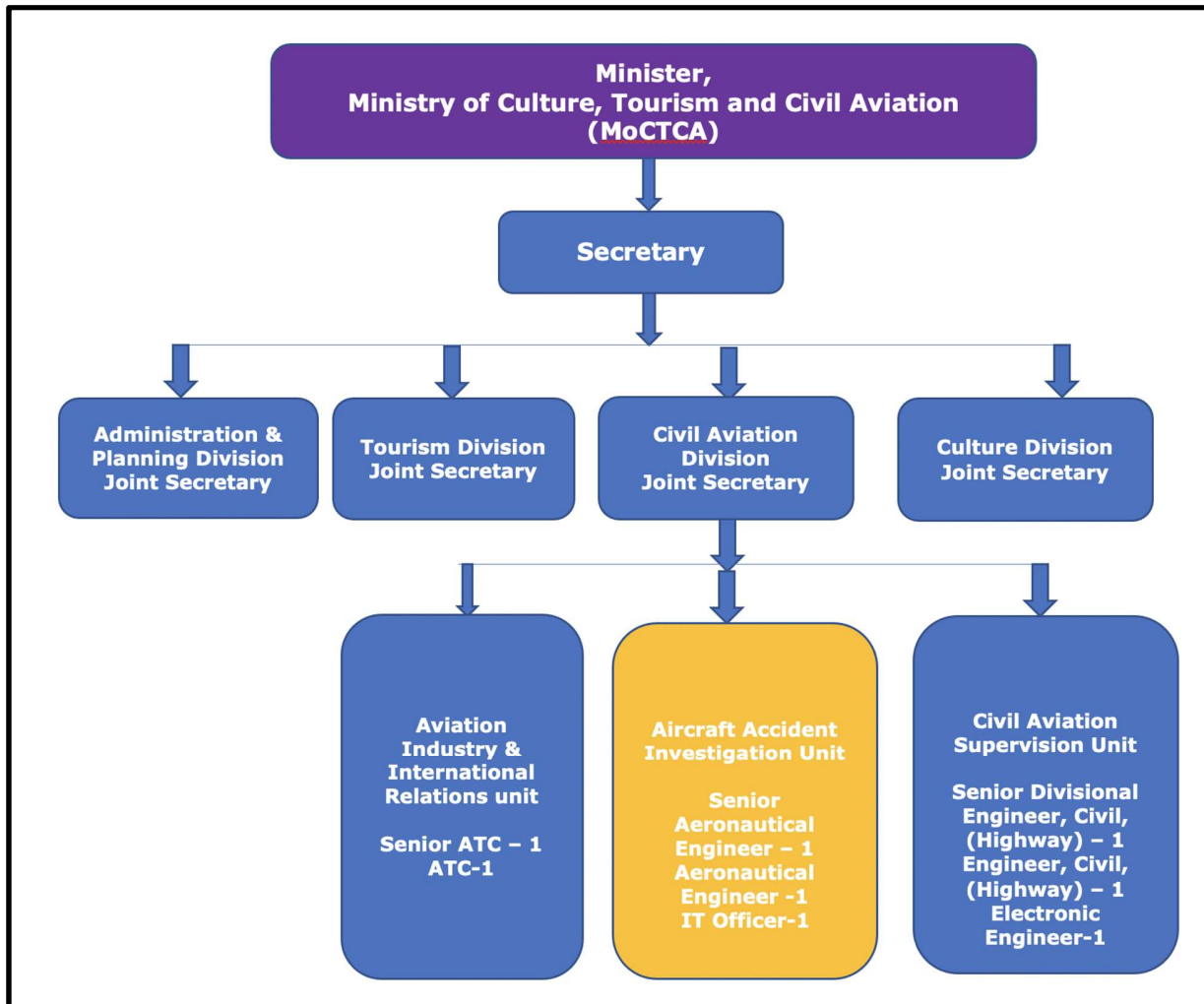
## Appendix - 1 : En-route Chart of Nepal

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NEPAL

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**Appendix- 2: Organogram of Civil Aviation Division**

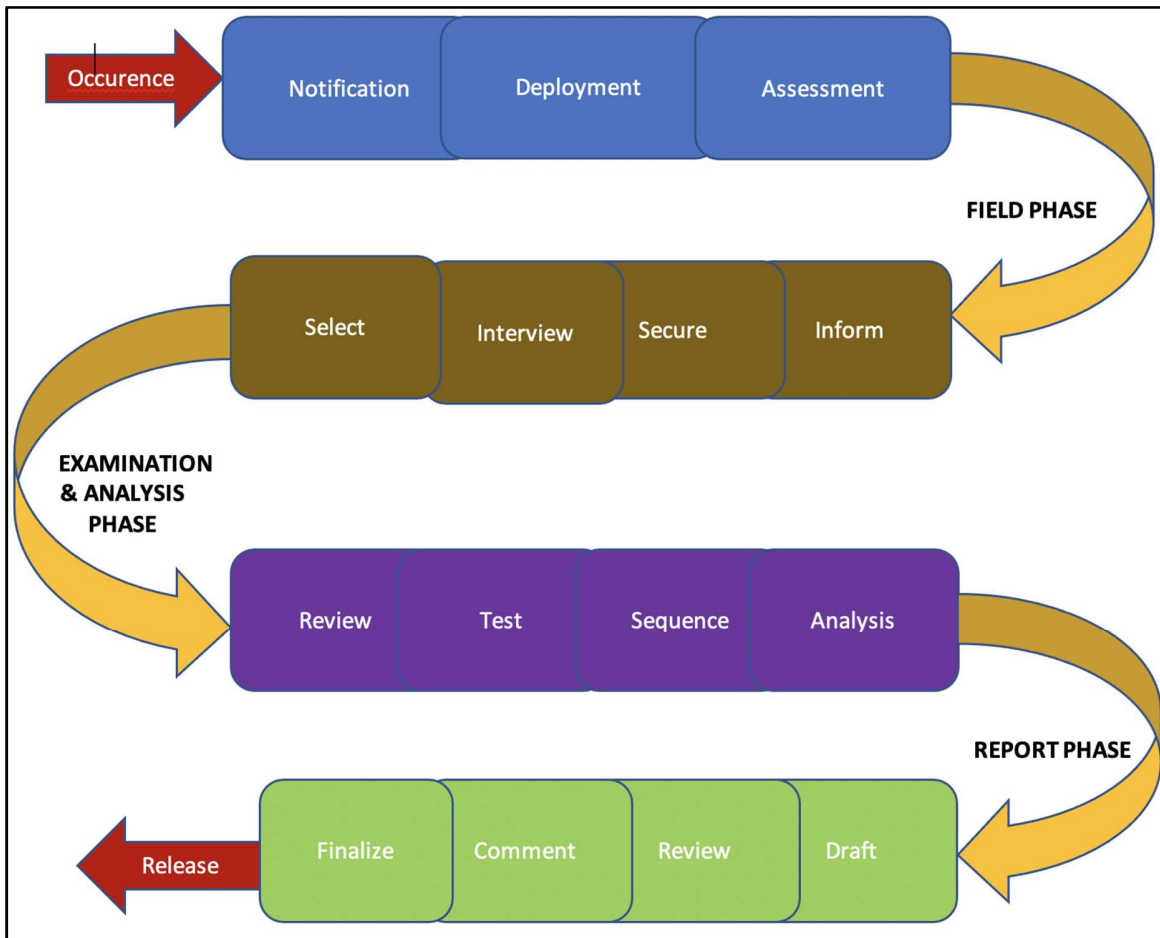


*Note: For the purpose of this report, only the Civil Aviation Division is considered, thus, other divisions are not mentioned in detail.*

**Appendix-3: Scope of Work of MoCTCA in the civil aviation sector**

1	Licensing and Regulation of Aircraft Design and manufacture, operation and maintenance, airport construction and operation, air navigation service and aviation training organization
2	Regulation of airfare, airport charges, air navigation service charges
3	Licensing and operation authorization of airlines operation
4	Drafting civil aviation policies, standards and guidelines and its regulation
5	Licensing, standardization and regulation of civil aviation professionals
6	Implementation of Aviation Safety and Aviation Security standards, recommended practices and directives as stipulated by International Civil Aviation Organization
7	Airspace Management
8	Air Navigation, Meteorology for civil aviation weather information service
9	Aviation Search and Rescue coordination and cooperation
10	International, Regional and Domestic airport construction, operation and management
11	Aircraft Accident Investigation
12	Licensing and policies for recreational Aviation - paragliding, ultralight, hang gliding

**Appendix-4: Accident Investigation Process**





### Appendix-5: Effective Implementation Audit Results

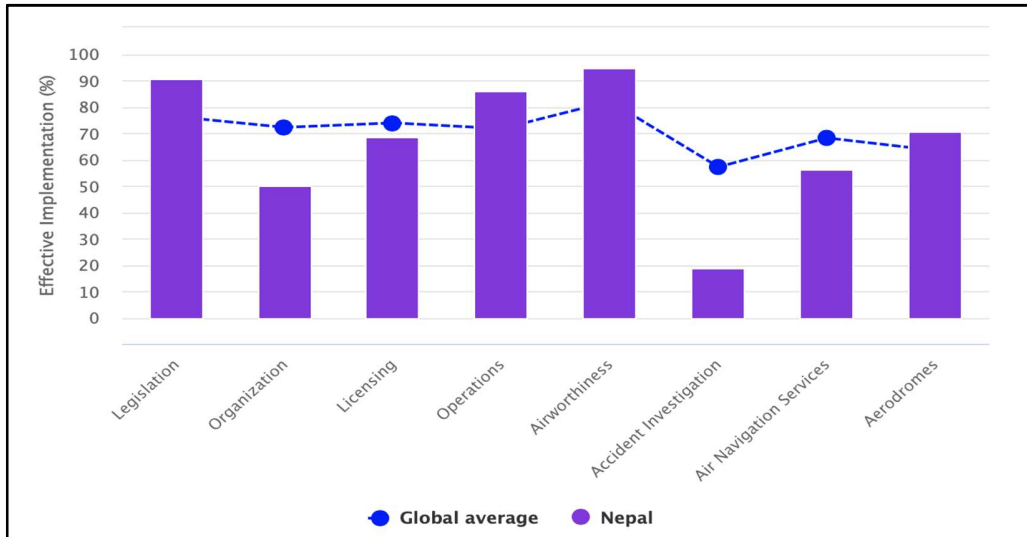


Figure 1: Effective Implementation Audit Results (ICAO, 2022)

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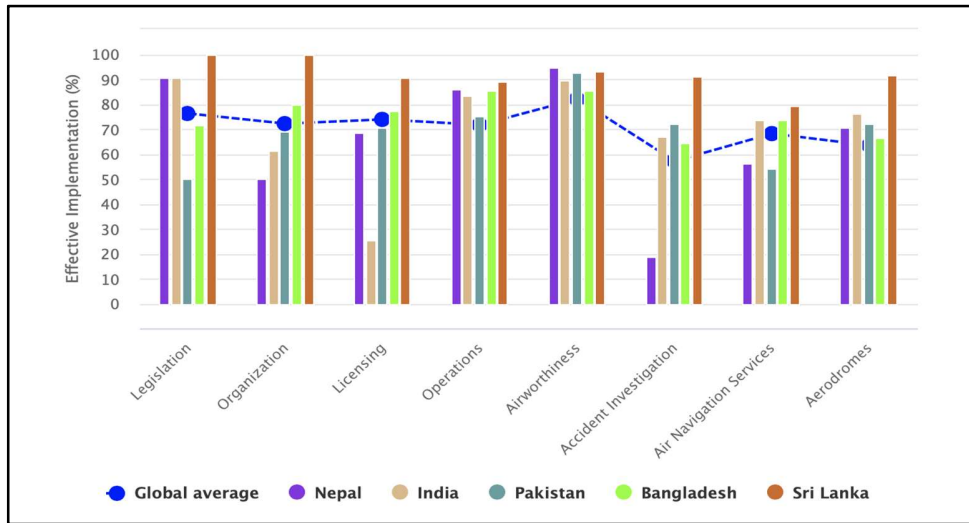


Figure 2: Effective Implementation in SAARC nations (ICAO, 2022)

**Appendix- 6: Multi-engine Aircraft Accident in Nepal**

S.N.	Date	Registration	Type of A/C	Operator/Owner	Operation	Place	Fatality	Survival
1	5 Nov 1960	9N-AAD	DC-3	Nepal Airlines	Scheduled	Bhairahwa	4	None
2	1 Aug 1962	9N-AAH	DC-3	Nepal Airlines	Scheduled	TulachanDhuri	10	None
3	12 July 1969	9N-AAO	DV-3	Nepal Airlines	Scheduled	Near Heatauda	35	None
4	25 Jan 1970	9N-AAR	F-27	Nepal Airlines	Scheduled	New Delhi	1	22
5	15 Oct 1973	9N-ABG	DHC-6/300	Nepal Airlines	Scheduled	Lukla	None	6
6	22 Dec 1984	9N-ABH	DHC-6	Nepal Airlines	Scheduled	Cheklatidanda	15	8
7	02 May 1986	9N-ABI	DHC-6	Nepal Airlines	Scheduled	Sanfebagarirport	None	
8	19 Aug 1987	9N-ABB	DHC-6	Nepal Airlines	Scheduled	Dolpa	None	
9	9 Jun 1991	9N-ABA	DHC-6	Nepal Airlines	Scheduled	Lukla	None	
10	28 Jun 1991	9N-ABS	DHC-6	ATSC,DCA	Charter	Simikot	None	
11	26 Sep 1992	9N-ACI	Y-12	Nepal Airways	Scheduled	Lukla	None	
12	08 Nov 1993	9N-ACS	Y-12 II	Nepal Airways	Scheduled	Jomsom	None	
13	31 Jul 1993	9N-ACL	DO-228	Everest Air	Scheduled	Solighopte	18	None
14	14 Jan 1995	9N-ABI	DHC-6	Nepal Airlines	Scheduled	Kathmandu Airport	2	23
15	15 Jul 1995	9N-ADB	Y-12	Nepal Airways	Scheduled	Bharatpur	None	
16	25 Apr 1996	9N-ABR	HS-748	Nepal Airlines	Scheduled	Meghauli	None	
17	28 Jul 1996	9N-ACC	DHC-6/300	ATSC,DCA	Charter	Simikot	None	
18	23 Dec 1996	9N-ACF	Y-12	Nepal Airways	Scheduled	Dolpa	None	
19	21 Aug 1998	9N-ACC	DHC-6	Sangrila Air	Scheduled	ChuchcheKhark,Myagdi	18	None
20	05 Sept	9N-AEG	HS-748	Necon Air	Scheduled	Thankot, Kathmandu	15	
21	25 Dec 1999	9N-AFL	DHC-6	Skyline Airways	Scheduled	Burjo Lake, Makwanpur	10	
22	26 Feb 2000	9N-ABO	DHC-6	Nepal Airlines	Scheduled	Bajhang	1	
23	27 Jul 2000	9N-ABP	DHC-6	Nepal Airlines	Scheduled	Jogbuda, Dadeldhura	25	None
24	03 Nov 2000	9N-ACV	DO-228	Gorkha Airlines	Scheduled	Lukla	None	

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25	19 Nov 2000	9N-AFS	DO-228	Cosmic Air	Scheduled	Tumlingtar	None	
26	05 Apr 2001	9N-AEV	DHC-6/300	Yeti Airlines	Scheduled	Tumlingtar	None	3
27	17 Jul 2002	9N-AGF	DHC-6/300	Skyline Airlines	Scheduled	GadgadeDanda,Surkhet	4	None
28	22 Aug 2002	9N-AFR	DHC-6/300	Shangrila Air	Scheduled	Pokhara	18	None
29	21Apr 2004	9N-AEK	B1900D	BuddhaAir	Scheduled	TIAAirport	1	None
30	25May 2004	9N-AFD	DHC-6/300	Yeti Airlines	Scheduled	Lamjura,Solukhumbu	3	None
31	30June 2005	9N-AEO	DO-228	Gorkha Airlines	Scheduled	Lukla Airport	None	12
32	12June 2006	9N-AEQ	DHC-6/310	Yeti Airlines	Scheduled	JumlaAirport	9	None
33	03July 2006	9N-AFE	DHC-6/310	Yeti Airlines	Scheduled	Bajura Airport	None	3
34	08Oct 2008	9N-AFE	DHC-6/300	Yeti Airlines	Scheduled	Lukla Airport	18	1
35	24Aug 2010	9N-AHE	DO-228	Agni Air	Scheduled	Sikharpur,Makawanpur	14	None
36	15Dec 2010	9N-AFX	DHC-6/300	Tara Air	Scheduled	Okhaldhunga,	22	None
37	25Sept 2011	9N-AEK	Beech1900 D	Buddha Air	Scheduled	Kotdanda,Lalitapur	19	None
38	14May 2012	9N-AIG	DO-228	Agni Air	Scheduled	Jomsom Airport	15	6
39	21Sept 2012	9N-ABQ	Do-228	Tara Air	Scheduled	Dolpa	None	7
40	28Sept 2012	9N-AHA	DO-228	Sita Air	Scheduled	Manohara,Bhaktapur	19	None
41	16May2013	9N-ABO	DHC-6/300	Nepal Airlines	Scheduled	Jomsom Airport	None	22
42	01June 2013	9N-AHB	DO-228	Sita Air	Scheduled	Simikot Airport	None	7
43	16Feb 2014	9N-ABB	DHC-6/300	Nepal Airlines	Scheduled	Masinelek, Arghakhanchi	18	None
44	24Feb 2016	9N-AHH	DHC-6/400	Tara Air	Scheduled	Dana,Myagdi	23	None
45	24Sept 2016	9N-AIB	J41	Yeti Airlines	Scheduled	Bhairahawa	None	32
46	27May 2017	9N-AKY	Let410	Summit Air	Cargo	Lukla Airport	2	1
47	28Nov 2017	9N-ABM	DHC-6/300	Tara Air	Scheduled	Simikot	None	16
48	9June 2018	9N-AEV	DHC-6/300	Tara Air	Scheduled	Jumla	None	21
49	1 Sept. 2018	9NA-HW	JS41	Yeti Airlines	Scheduled	TI Airport	None	21
50	14 April 2019	9N-AMH	LET 410	Summit Air	Scheduled	Lukla Airport	1+2	2
51	March28,2020	9NAKU	Y12 E	NAC	Charter	Nepalgunj airport	0	None

**Appendix-7: Single Engine Aircrafts Accident in Nepal**

S.N.	Date	Registration	Type of A/C	Operator/Owner	Operation	Place	Fatality	Survival
1	31 Mar 1975	9N-AAZ	PC-6	Nepal Airlines	Charter	Bouddha, Kathmandu	5	None
2	30 Oct 1981	9N-ABJ	PC-6	Nepal Airlines	Charter	Biratnagar	10	None
3	20 Nov 1998	9N-ABK	PC-6/B2-H4	Nepal Airlines	Charter	Phakding	1	None
4	17 Jan 1999	9N-ADA	Cessna-208	Necon Air	Charter	Jumla	5	7
5	21 Nov 2011	9N-AJM	Cessna-208	Makalu Air	Cargo	Talcha Airport	None	None
6	26 Feb 2016	9N-AJB	PAC750XL	Air Kashthamandap	Charter	ChilkhayaKalikot	2	9
7	08 Apr 2016	9N-AKC	Cessna-208	Makalu Air	Cargo	Near Simikot	None	2
8	16 May 2018	9N-AJU	Cessna-208	Makalu Air	Cargo	Simikot Pass	2	None

**Appendix-8: Helicopter Accidents in Nepal**

S.N.	Date	Registration	Type	Operator/Owner	Place	Fatality	Survival
1	27 Dec 1979	9N-RAE	Allutte-III	VVIP	Langtang	6	None
2	27 Apr 1993	9N-ACK	Bell-206	Himalayan Helicopter	Langtang	None	
3	24 Jan 1996	9N-ADM	MI-17	Nepal Airways	Sotang	None	3
4	30 Sep 1997	9N-AEC	AS-350	Karnali Air	Thupten Choling	1	4
5	13 Dec 1997	9N-ADT	MI-17	Gorkha Airlines	Kalikot	None	
6	04 Jan 1998	9N-RAL	Bell-206	VVIP Flight	Dipayal		
7	24 Oct 1998	9N-ACY	AS-350B	Asian Airlines	MulKhark	3	None
8	30 Apr 1999	9N-AEJ	AS-350BA	Karnali Air	Lisunkhu, Sindhupalchowk	None	
9	31 May 1999	9N-ADI	AS-350B2	Manakamana Airways	Ramechhap	None	
10	11 Sep 2001	9N-ADK	MI-17	Air Ananya	Mimi	None	5
11	12 Nov 2001	9N-AFP	AS-350B	Fishtail Air	Rara Lake, Mugu	4	2
12	12 May 2002	9N-AGE	AS 350B2	Karnali Air	Makalu Base Camp	None	1
13	30 Sep 2002	9N-ACU	MI-17	Asian Airlines	Sholumkhumbu*	11	None
14	(MI8-MTV)	Asian Airlines	Sholumkhumbu*	11	None	2	6
15	28 may 2003	9N-ADP	MI-17 IV	Simrik Air	EverestBase Camp	2	6
16	04 Jan 2005	9N-AGG	AS-350BA	Air Dynasty Heli Service	Thhose VDC, Ramechhap	3	None
17	02 Jun 2005	9N-ADN	MI-17	Shree Airlines	EverestBase Camp.	None	7
18	07 May 2006	9N-ADT	MI-17 MTV1	Heli Hansa Services	Dhawalagiri Base Camp	None	7
19	08 Aug 2006	9N-AGS	MI-17	Karnali Air	TI Airport, KTM	None	5
20	03 Sep 2006	9N-ACR	AS-350BA	Air Dynasty Heli Service	Dhawalagiri BaseCamp	None	1
21	23 Sep 2006	9N-AHJ	MI-17	Shree Airlines	Ghunsa, Taplejung	24	None
23	29 Jun 2008	9N-AIA	AS-350	Fishtail Air	Annapurna Base Camp	None	4
24	07 Nov 2010	9N-AIX	AS 350B3	Fishtail Air	Amadablam Mountain	2	None
25	29 Nov 2011	9N-AIK	AS 350B	Fishtail Air	Solukhumbu	None	2
26	19 Jun 2013	I-VIEW	AS 350B3	Fishtail Air	Simikot, Muchu	1	5

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27	03 Aug 2014	9N-AJI	AS 350B3	Fishtail Air	Sindhupalchok	1	None
28	02 Jun 2015	9N-AJP	AS 350B3	Mountain Helicopter	Yamuna Danda, Sindhupalchok	4	None
29	22 Jun 2015	9N-AKF	AS 350B3e	Simrik Air	Samdo, Gorkha	None	5
30	17 Mar 2016	9N-AJI	AS 350B3	Fishtail Air	Langtang	None	1
31	08 Aug 2016	9N-AKA	AS 350B3	Fishtail Air	Betani, Nuwakot	7	None
32	30 June 2018	9N-ALR	AS 350B2	Simrik Air	Grandy Roof-top Helipad	None	1
33	14 Aug. 2018	9N-AHV	AS350 B	Manang Air	Hilsa, Humla	1	6
34	8 Sept. 2018	9N-ALS	AS350 B3	Altitude Air	Dhading	6	1
35	27 Feb. 2019	9N-AMI	AS350 B3 E	Air Dynasty	Pathivara, Taplejung	7	None
36	14 April 2019	9N-ALC	AS350	Manang Air	Lukla Airport	None	1

## Appendix-9: Foreign Registered Aircraft Accidents in Nepal

S.N.	Date	Registration	Type	Operation	Operator/ Owner	Place of accident	Fatality	Survival
1	30 Aug 1955	VT-AZX	DC-3	Scheduled	Kalinga Air	Simara	2	1
2	15 May 1956	VT-DBA	DC-3	Scheduled	Indian Airlines	Kathmandu	14	19
3	24 Mar 1958	VT-CYN	DC-3	Scheduled	Indian Airlines	Patnebnajyang	20	None
4	10 May 1972	HS-TGU	DC-8-33	Scheduled	Thai Airways International	TIA	0+1	110
5	31 Jul 1992	HS-TID	A 310	Scheduled	Thai Airways International	Gyangphedi	113	None
6	28 Sep 1992	AP-BCP	A 310	Scheduled	Pakistan International Airlines	Bhattedanda	167	None
7	07Jul1999	VT-LCI	B727(200)	Cargo	Lufthansa	Bhasmasur Hill, Kathmandu	5	None
8	4 Mar 2015	TC-JOC	A330-300	Scheduled	Turkish Airlines	TIA	None	235
9	12 Mar 2018	S2 – AGU	DHC 8 D	Scheduled	US Bangla	TIA	51	20

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